

REMARKS

Claims 1-25 are rejected in the present application. Claims 1, 11, 16, 19 and 21 have been amended. No new matter has been added. The Applicants respectfully request reconsideration of the application in light of the amendments to the claims and the following remarks.

The Office Action has made a double patenting rejection based on U.S. Patent No. 6,836,839 and U.S. Patent No. 6,986,021 both commonly assigned to the assignee of the present applications. Applicant is submitting herewith appropriate terminal disclaimers. Applicant respectfully submits that the terminal disclaimers overcome the double patenting rejections.

The Office Action has refused to consider the references in the Information Disclosure Statement filed on June 5, 2008. The Office Action has noted that the IDS filed June 5, 2008 lists too many irrelevant references and has been crossed out. Applicant respectfully submits that its Information Disclosure Statement is in compliance with all of the applicable statutes and rules such as 37 C.F.R. 1.56 and MPEP 2001.04. Such references were cited in other commonly assigned patent applications in the same general technology field and/or are deemed relevant to the present application. In fact, MPEP 2001.04 specifically requires that the information submitted “is intended to be all encompassing.” Further, MPEP 2004(10) recommends that “when in doubt, it is desirable and safest to submit information.” Applicant respectfully requests consideration of the references cited in the Information Disclosure Statement as it is believed that all of Applicant’s requirements have been met.

The Office Action rejected claim 21 as anticipated by U.S. Patent No. 5,450,557 (“Kopp”).

The Office Action rejected claims 1-20 and 22-25 as obvious over Kopp in view of U.S. Patent No. 6,526,430 (“Hung”).

The claims generally relate to a system with two functional units of heterogeneous computational elements. The first functional unit is configured for a first function while the second functional unit is configured to perform a second function. If the second function is not used, at least part of the second functional units of heterogeneous computational elements are reconfigured to perform the second function while the first functional unit is still operating. In this manner, tasks may be performed efficiently by shifting faster hardware resources to perform multiple functions. The adaptable device has a plurality of heterogeneous computational elements and an interconnection network is coupled to the plurality of heterogeneous computational elements 250A-D as shown in Fig. 3. Such elements are configurable by the network 210 in response to adaptation information. A first group of the heterogeneous computational elements is configurable to form a first functional unit to implement a first function. A second group of the heterogeneous computational elements is configurable to form a second functional unit to implement a second function. If the second function is not currently used, one or more of the second group of heterogeneous computational elements are reconfigurable by forming one or more additional instances of the first functional unit. The reconfiguration of the second group of heterogeneous computational elements may take place while the first group of computational elements is performing the first function thus providing on the fly flexibility for an adaptable hardware device.

In contrast, Kopp discloses a single chip self-configurable parallel processor. The chip has different types of computation circuits that may be interconnected via multiplexers. (Abstract). Kopp does not disclose the fundamental concept of reconfiguring the connections between the computation circuits to perform different functions and to change the functions of certain groups of computational circuits.

Hung relates to a dual processor system having a normal generic processor core 110 and a software reconfigurable co-processor 140. The software reconfigurable co-processor appears to have a number of pre-prepared functions that may be selected via software. Neither of the processors in Hung relate to hardware configuration of either processor. Hung therefore is fundamentally different from hardware reconfiguration since the so-called configuration in Hung is actually performed by software.

Applicant has amended claim 21 to require that the second functional unit is reconfigured to implement the first function, “while the first functional unit is implements the first function The Office Action has cited Kopp and specifically Col. 2, l. 58 to Col. 3, l. 68 and Col. 4, ll. 1-26.” These sections do not disclose reconfiguring a second set of heterogeneous computational elements as required by the claims. These sections simply describe the physical layout of the computational elements. Further, Kopp does not disclose nor suggest reconfiguring a second functional unit that had been implementing a second function to implement the first function while the first functional unit is implanting the first function as now is required by claim 21.

Applicant has amended claim 1 to require that a first computational unit having a first plurality of heterogeneous computational elements and a first computational interconnection network and a second different digital processing unit having heterogeneous computational elements and a second interconnection networks. Claim 1 now requires two heterogeneous computational units that are both configurable via their respective interconnection networks. The combination of Kopp and Hung do not disclose heterogeneous computational units as now required by amended claim 1. As explained above, Kopp only discloses a single processor (computational unit) having homogeneous computational elements. Kopp does not disclose multiple heterogeneous computational units as now required in amended claim 1. Hung

discloses two cores, but as explained above, these two cores are not configurable via respective interconnection networks configuring the connections between the respective computational elements.

Applicant has also amended claims 6, 11 and 16 to require that the second group of heterogeneous computational unit or units are reconfigurable while the first functional unit implements the first operating mode. Neither Kopp nor Hung discloses reconfiguration of the computational unit while the first function is being performed. Both Kopp and Hung require configuration and reconfiguration to take place before the operation of the adaptive circuit.

With regard to claims 1-20 and 22-35, the Office Action concedes that Kopp does not disclose if the second operating mode is not currently used, one or more of the second group of heterogeneous computational units are reconfigurable to implement the first operating mode. The Examiner has asserted that Hung discloses reconfiguring multiple computational elements based on the need and availability citing Col. 9, l. 5 to Col. 10, l. 5. However, the section cited by the Examiner does not have any suggestion to reconfigure elements during the operation of the device. Applicant respectfully submits that claims 1, 6, 11 and 16 and their dependents are allowable over either Hung or Kopp.

CONCLUSION

In view of the above amendments and remarks, the Applicants believe that all of the claims are in condition for allowance and action towards that effect is respectfully requested. If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney at the number indicated. It is believed that no additional fees are due in connection with this Amendment and Response.

However, in the event that any additional fees are required (except for payment of the issue fee), the Commissioner is authorized to deduct the fees.

Respectfully submitted,

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